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Total Number of Pages in This Submission: 48

Application Number	09,827,583
Filing Date	04/06/01
First Named Inventor	Marlon Calmer
Art Unit	3671
Examiner Name	Mammen, Nathan S.
Attorney Docket Number	P3098

ENCLOSURES *(Check all that apply)*

- ☑ Fee Transmittal Form
- ☑ Fee Attached
- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☑ Extension of Time Request
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- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
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- ☐ After Allowance Communication to TC
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- ☑ Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
- ☐ Proprietary Information
- ☐ Status Letter
- ☐ Other Enclosure(s) (please identify below):

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Law Office Of Jay R. Hamilton,PLC.		
Signature			
Printed name	Jay R. Hamilton		
Date	June 21, 2005	Reg. No.	50,644

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Board of Patent Appeals and Interferences

In re Application of: Calmer, Marion	
Serial No.: 09/827,563	Examiner: Mammen, Nathan S.
Filed: 04/06/2001	Art Unit: 3671
For: Strategic Spatial Realignment for Attaching Cornheads to Combines)	

APPEAL BRIEF

I. Real party in interest.

The real party in interest is inventor and applicant Marion Calmer as named in the above caption.

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II. Related appeals and interferences.

No related appeals or interferences related to this application are currently pending.

III. Status of claims.

No claims currently stand allowed. Claims 1-15 and 25-28 have been previously cancelled and are not subject to further argument. Applicant herein appeals Examiner's denial of claims 16-24 requests allowance by the Board of Appeals and Interferences.

IV. Amendment Status

On January 19, 2005 Applicant filed an amendment in response to Examiner's final rejection mailed on October 19, 2004. Thereafter, on March 8, 2005 the Examiner mailed an advisory action denying entry of applicant's amendment. Applicant filed a Notice of Appeal on March 21, 2005 along with an amendment in support of Applicant's position and requesting allowance of the claims as submitted. Examiner thereafter mailed a supplemental advisory action restating Examiner's position and maintaining denial of entry of the amendment and non-allowance of the claims.

V. Summary of Invention

Applicant's invention is for modification of the attachment of a corn head to a threshing combine to provide an improved flow of material from the corn row to the grain threshing section of the combine. These modifications of structure and the resultant spatial changes to the variety of the conveying systems used from the row to the threshing section of the combine result in a more efficient harvesting combine. The spatial relationship between the powered and the un-powered conveying systems moving in different directions permits improved flow and flow rates thereby reducing plugging and power consumption. Material is lifted through a lesser angle of the inclined plane from the ground to thresher unit. In operation a smooth uninterrupted flow of material from the row unit to the cross auger through the dead space (energy wise) to the retrieving area of the feeder house is provided for. The primary elements that must be

understood to practice Applicant's invention are that the angle of exit from the second conveyor must be lowered, the difference in vertical distance between the third conveyor and the second conveyor must be reduced and the gap created by reducing the difference in vertical distance must be bridged.

VI. Issues

A. Whether claims 16-24 are unpatentable under 35 U.S.C. 112, first paragraph, as being based on a non-enabling disclosure?

B. Whether claims 16-24 are unpatentable under 35 U.S.C. 102 over Rayfield?

VII. Grouping of Claims.

Applicant requests that the Board review Claim 16 as previously submitted to the Examiner by amendment.

VIII. Arguments.

35 U.S.C. 112, 1st Paragraph

A. APPLICANT'S DISCLOSURE IS SUFFICIENT FOR ENABLEMENT

The primary issue in this appeal is whether applicant's initial disclosure and claims support the amended claims numbered 16-24 and included at Appendix A. More particularly, Applicant and the Examiner are in disagreement about whether Applicant's initial disclosure supports the following paragraph as found in Applicant's amended claim 16, section vi, subsection a (C16,§vi,§§a), (*Emp. Added*):

> **a section of said second conveyor auger trough, located at the center of the row units and being substantially the same width as the entrance to the third conveyor system, wherein the auger trough surface is substantially flat from the center of the auger trough through the exit of said second conveyor system to the entrance of said third conveyor system; and,**

The subject matter disclosed in claim 16 is the modification of the structure to attach the corn head to the combine threshing unit. In describing and claiming the subject matter at issue, there are three distinct areas of the corn head that require description:

1. The powered stalk rolls and gathering chains, which are referred to within the claims as the "first conveyor";
2. The powered cross auger, which is referred to within the claims as the "second conveyor"; and,
3. The powered paddles contained within the feederhouse, which is referred to within the claims as the "third conveyor".

It is Applicant's position that language in claim 16 at issue, as listed above, is fully supported and therefore allowable as supported by the patent application originally filed both as a whole and in sufficient specificity to enable one practiced in the arts. This position is supported by the following paragraphs and figures from the original application:

a) "The auger trough 200 has its vertical rear side removed when it is opposite the feeder house 340 and the feeder house chain 320." (*See* App. B, p. 12, ¶14, lines 11-15)
b) Upon engagement of the combine head with the combine harvester, the auger trough outlet and the combine feeder house provide an area of engagement that is a continuous channel or space for the flow of harvested material between the corn head and to the combine during operation of the combine harvester. (*See* App. B, p. 12, ¶14, lines 11-15)
c) The purpose and intent of the invention as disclosed as a whole is to decrease dead space, reduce the angle of incline between the conveyors and increase corn head performance. (*See* App. B, p. 11-12)
d) "FIG. 4a shows the invention with lowering only to the aft portion of auger trough 200 in front of feeder house 340." (*See* App. B, p. 15, ¶31, lines 22-23)
e) FIG. 4a (See App. B, p. 5)

The basis for the Examiner's rejection is that Applicant's original disclosure does not teach the width of the area from the 2nd conveyor to the 3rd conveyor as described and does not teach that the auger trough surface is substantially flat across the entire width of the area from the 2nd conveyor to the 3rd conveyer as originally described, disclosed and now claimed by the applicant in claims 16-24.

Applicant's description provides the width of the area of engagement between the outlet of the auger trough and the inlet of the feeder house is to be both opposite and complimentary as described by listed paragraph (a).[1] Removal of the rear vertical side of the auger trough 200 also describes the auger trough 200 outlet which is engaged or opposite to the entrance to the feeder house 340. Applicant argues that width of the cross auger trough outlet was specified by removal of the vertical rear side or wall when opposite the feeder house 340 and feeder house opening thus teaching that the outlet of the cross auger trough 200 and the inlet to the feeder house 340 are substantially the same width.

Applicant's specification need only be reasonable with respect to the art involved; it does not need to inform the layman nor disclose what the skilled already possess. It need not describe the conventional.... The intricacies need not be detailed ad absurdum.[2] Applicant's specification is reasonable with respect to the invention claimed and disclosed as supported by paragraphs (b) and (c)

[1] Opposite may be defined as: being the other of a pair that are corresponding or complementary in position, function, or nature (i.e. member of the opposite sex). *See* Webster's Ninth New Collegiate Dictionary, 1991.
[2] *See* General Electric Co. v. Brenner 159 USPQ 335 (D.C. Cir. 1968)

above. The Examiner's disclosure requirements are unreasonable and incorrect as shown. Furthermore, in a mechanical case, such as the case herein, broad claims may be supported by as single form of the apparatus as disclosed both the written and pictorial description of Figure 4a as listed in paragraphs (d) and (e) above. [3]

B. COMPARISION OF APPLICANT'S INVENTION TO THE PRIOR ART "RAYFIELD"

The Examiner has previously rejected Applicant's claims under 35 U.S.C. 102 as anticipating Applicant's invention. The Examiner has taken the position that the present application is patentable over Rayfield only if Applicant's disclosure supports the disputed claim language as found at claim 16.[4] Therefore, it is first necessary to discuss and differentiate the Rayfield prior art.

As a preliminary matter, the Rayfield patent is assigned to New Holland of North America, a major combine manufacturer.[5] The Rayfield patent solves a very specific problem common with twin rotor combines such as those built by New Holland.[6] During operation in uneven terrain, the corn ears commonly tumble from the high side of the combine to the low side. The low side rotor would then be overloaded and the high side rotor would be under-utilized or empty. This same effect could also occur if the crop to be harvested was simply uneven. The purpose of the structure taught by Rayfield is to segregate or divide

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[3] *See* In re Vickers, 61 USPQ 122, 127 (C.C.P.A 1944)

[4] "a section of said second conveyor auger trough, located at the center of the row units and being substantially the same width as the entrance to the third conveyor system, wherein the auger trough surface is substantially flat from the center of the auger trough through the exit of said second conveyor system to the entrance of said third conveyor system; and,"

[5] *See* App. C, p. 1, Assignee.

[6] *See* App. C, p. 7, Col. 2, lines 56-58.

the flow of corn ears and then to re-orient the flow of the corn ears from traveling along the axis of the transverse auger axis to flowing into the feeder house opening.[7]

Rayfield contains five (5) drawing to support and enable the disclosure. Applicant's application contains seven (7) drawings. Figures 1-2 of Rayfield are very similar to Applicant's figures 1-2 in that both show a combine corn head attached to a corn head and a top view of a corn head, respectively. Figure 3 of Rayfield shows a side cut-away view of Figure 2. In this view, the divider 40 is shown positioned in relation to the auger trough 10. Applicant's figure 3 also shows a similar perspective of the prior art. Rayfield then goes on to show a front view and top view of the invention in Figures 4 and 5, respectively, as placed in relation to the auger trough 10 and entrance of the feeder house opening 11. Applicant's figures 4, 4a, 5 and 6, in contrast, highlight the different embodiments claimed within the invention. Figure 4a specifically shows a substantially flat section at the outlet of the auger trough 200 between D and E as described and claimed in the amended claims subject of this appeal. No top or front views of this embodiment are provided. It is applicant's position that no top or front views of this embodiment are necessary to enable or claim the invention because the view provided by Figure 4a fully enables those practiced in the arts.[8]

Applicant's believes Examiner's position is that Applicant should have included a drawing similar to the Figures 4 and 5 of Rayfield. Although useful, those

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[7] *See* App. C, p. 7, Col. 2, lines 52-54.

[8] *See* In Re Wolfensperger, 133 USPQ 537, 542 (C.C.P.A. 1962) (restating the principle that the practical, legitimate inquiry in each case involving new matter is what the drawing in fact discloses to one skilled in the art. Whatever it does disclose may be added to the specification in words without violation of the statute and rule which prohibit "new matter," 35 U.S.C. 132, Rule 118, for the simple reason that what is originally disclosed cannot be "new matter" within the meaning of this law. If the drawing, then, contains the necessary disclosure, it can "form the basis of a valid claim."

views are not necessary for enablement. Primarily because a top or front view of the Figure 4a, showing a flattened rear section of auger trough 200, having a width substantially the same width as the entrance to the third conveyor system, feeder house opening 11 in Rayfield and labeled E in Applicant's Figures 3-6, does not present a visible line. A top and side view equivalent to Figures 4 and 5 of Rayfield are therefore extraneous and not necessary for enablement.

Those practiced in the arts would understand based on the combination of the purpose of the invention and the drawings found therein that no difference or restriction in width between the auger trough and the feeder house is contemplated and thus, no figure directly showing this is necessary to understand the invention.

C. THE WIDTH OF THE AUGER OUTLET IS INHERENT TO THOSE PRACTICED IN THE ARTS

Finally, Applicant argues that the disclosure is not required to teach the width of the opening from the second conveyor (cross auger trough) to the third conveyor (feeder house inlet) because it would be inherently understood by those practiced in the arts that the width of the cross auger trough outlet is substantially the same as the inlet to the feeder house by the inherent nature of how a corn head engages and is attached to a combine. If the width of the feeder house inlet and cross auger outlet were not substantially the same, there would be an opportunity for the harvested material to leave the combine before entering the threshing system. In view of the Applicant's disclosure, those practiced in arts would understand the width of the second conveyor outlet and the inlet of the third conveyor to be the same width. Figure 2 of Applicant's disclosure provides a top view of the corn head attached to the combine indicates

the two elements are of substantially similar width. That those practiced in the arts understand the width of the outlet of the auger trough is substantially the same as the width at the inlet of the feeder house for applicant's disclosure is supported by reference to Figure 2 of Rayfield. (*See* App. C, p. 3) Figure 2 shows that the width of auger trough outlet 10 to the inlet of the feeder house 11 is substantially the same. *Id.* Applicant argues that those practiced in the arts would understand that for both maximization of capacity of the combine and to ensure continuous containment of the harvested material, the outlet of the second conveyor, i.e. the outlet of the corn head cross auger and the inlet of the third conveyor, i.e. the inlet of feeder house, must be substantially the same width for proper engagement of the combine with the combine head. If the two are not the same width, there would not be proper engagement between the corn head and the combine.

Claims 16-24 are patentable under 35 U.S.C. 112, first paragraph, as being based on an enabling disclosure, based on any one of the three arguments put forth which alone or in combination support Applicant's initial description and thus the Examiner's new matter rejection under 35 U.S.C. 112, first paragraph is inappropriate and should be denied.

(ii) 35 U.S.C. 112, 2nd paragraph

No rejections or arguments based on 35 U.S.C. 112, second paragraph, are included herein.

(iii) 35 U.S.C. 102

To maintain a rejection based on 35 U.S.C. 102, the prior art must teach each and every element of applicant's invention. In this particular case, the cited prior art "Rayfield" as previously discussed, in fact does not teach a "flat auger trough".

Furthermore, Applicant's invention explicitly teaches away from the Rayfield's method of ear retention.[9]

The Examiner based the 102 rejection on an incorrect assertion as quoted in the Advisory Action mailed by the Examiner on March 8, 2005 by stating "Rayfield discloses a flat auger trough surface – see Fig. 3, 40 – but does not disclose that it is substantially as wide as the entrance to the third conveyor system – see Fig. 4 (of Rayfield). *See* App. C, p. 4, herein. However, upon further inspection it will should be noted that element 40 of Rayfield is the divider as taught by Rayfield. The auger trough as taught by Rayfield is element 10. Rayfield therefore, does not teach a flat auger trough 10 as argued by the Examiner and the 102 argument must fail for lack of anticipation. Claims 16-24 are patentable under 35 U.S.C. 102 over Rayfield.

(iv) 35 U.S.C. 103

No rejections or arguments based on 35 U.S.C. 112, second paragraph, are included herein.

CONCLUSION

Applicant respectfully requests the members of the Board of Patent Appeals and Interferences grant this request for relief and overturn Examiner's rejections and allow Applicant's patent claims.

Respectfully submitted,

MARION CALMER,

[9] *See* App. B, p. 12, paragraph 12, lines 4-5 which states "[t]his invention provides that hoods and grills may no longer be necessary for ear retention."

Date: June 21, 2005

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APPENDIX A: CLAIM LISTING

1. – 15. (Cancelled)

16. (Previously Presented) An apparatus improving the arrangement of and spatial relationship between the functional elements of a row crop harvester attachment or header unit for mounting on and co-acting with the functional elements of a mobile threshing unit, wherein the functional elements include:

    i. a row crop harvester having a main frame attachment mounted to a mobile harvesting threshing unit;

    ii. a first conveyor system in said row crop harvester including a power source, said power source connected to a plurality of row units mounted on said main frame for removing grain from the stalks and conveying the material including grain up a first inclined plane to exits from said first conveyor system;

    iii. a second conveyor system at right angles to said first conveyor system, said second conveyor system comprises a power source for receiving the harvested material from the exits of said first conveyor system, an auger with flighting and a curved trough containing said auger;

    iv. said auger cooperating with said curved trough to convey said harvest material from the exits of said first conveyor system to an area at the center of the plurality of row units for exit from said second conveyor system;

v. a third conveyor system including a power source in said mobile threshing unit for retrieving material in said open area and delivering the material to the thresher mechanism,

vi. said second conveyor system connected to said third conveyor system by an open area between the exit of the second conveyor system and the entrance of the mobile threshing unit; wherein the improvement is comprised of:

a. a section of said second conveyor auger trough, located at the center of the row units and being substantially the same width as the entrance to the third conveyor system, wherein the auger trough surface is substantially flat from the center of the auger trough through the exit of said second conveyor system to the entrance of said third conveyor system; and,

b. a vertical spacer inserted between the harvester row crop attachment and the mobile threshing unit to reduce the difference in height between the entrance of said third conveyor system and the height of the second conveyor system so that the angle of incline plane between the second and third conveyor systems is reduced allowing the second conveyor system and the entrance to the third conveyor system to operate in substantially the same horizontal plane.

17. (Previously Presented) The apparatus in accordance with claim 16, wherein said auger flighting is reversed on opposite sides of the centerline of said auger.

18. (Previously Presented) The apparatus in accordance with claim 16, wherein said first and second conveyor systems are moved vertically upward in relation to said third conveyor system an amount sufficient to reduce the angle of the horizontal plane from said second conveyer system exit to the entrance of said third conveyor system.

19. (Previously Presented) The apparatus in accordance with claim 16, wherein a feeder plate is attached to said second conveyor system for bridging between said second conveyor system and said third conveyor system.

20. (Previously Presented) The apparatus in accordance with claim 19, wherein said feeder plate is made of elastomeric material to allow movement between said second and third conveyor systems while maintaining the connection between said second and third conveyor systems.

21. (Previously Presented) The apparatus in accordance with claim 16, wherein the lateral distance between the second and third conveyor systems is reduced by moving laterally the connection of the header unit relative to the mobile threshing unit and thereby reducing the angle of the inclined planes.

22. (Previously Presented) The apparatus in accordance with claim 21, wherein said lateral movement between said first and second conveyor system and said third conveyor system is by a lateral spacer.

23. (Previously Presented) The apparatus in accordance with claim 22, wherein the lateral spacer is rectangular in shape.

24. (Previously Presented) The apparatus in accordance with claim 21, wherein the lateral spacer is a trapezoidal piece between the header unit and the threshing unit.

25. -28. (Cancelled)

US 20020144492A1

(19) United States
(12) Patent Application Publication (10) Pub. No.: US 2002/0144492 A1
Calmer (43) Pub. Date: Oct. 10, 2002

(54) STRATEGIC SPATIAL REALIGNMENT FOR ATTACHING CORNHEADS TO COMBINES

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(22) Filed: Apr. 6, 2001

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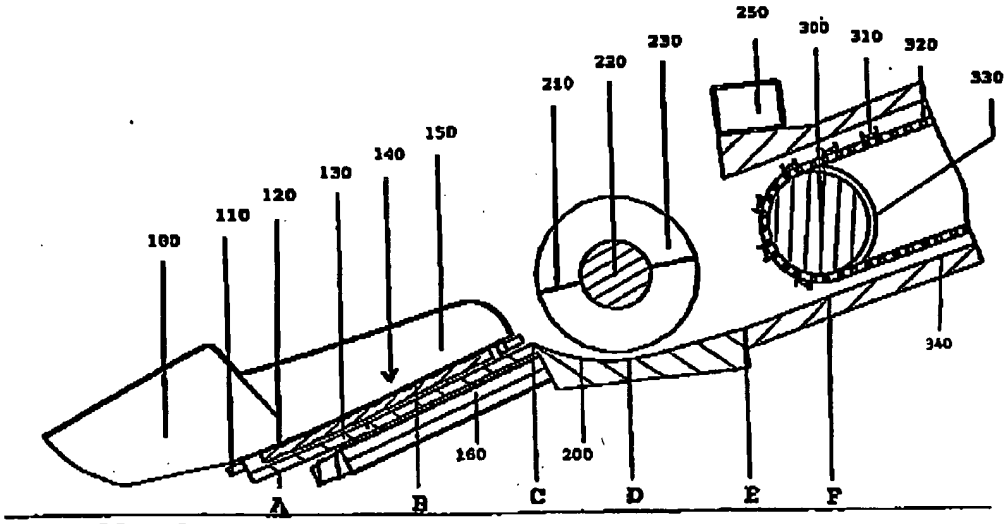
(52) U.S. Cl. 56/13.9; 56/51

(57) ABSTRACT

The corn harvesting unit and the attachment modifications for connection to the threshing unit provide an improved flow of material from the row to the threshed grain in the combine. These modifications of structure and the resultant spatial changes to the variety of the conveying systems used from the row to the grain tank of the combine result in a novel and more efficient harvesting machine. The novel spatial relationship between the powered and the unpowered conveying systems moving in different directions will permit improved flow and flow rate with less plugging while using less power. This invention also provides a smooth uninterrupted flow of material from the row unit to the cross auger, thence through the dead space (energy wise) to the retrieving area of the feeder house. More efficient harvesting at higher speed is possible as the amount of material is lifted through a lesser angle of the inclined plane from ground to thresher unit.



APPENDIX B: PATENT APPL. 09,827,563

1 of 20

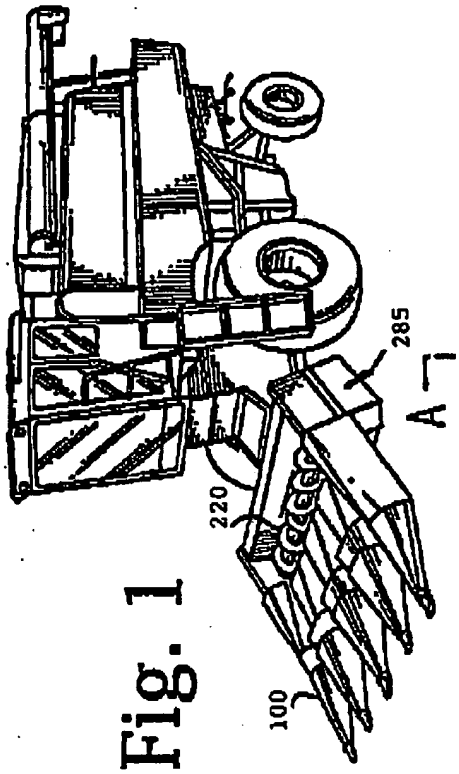


Fig. 1

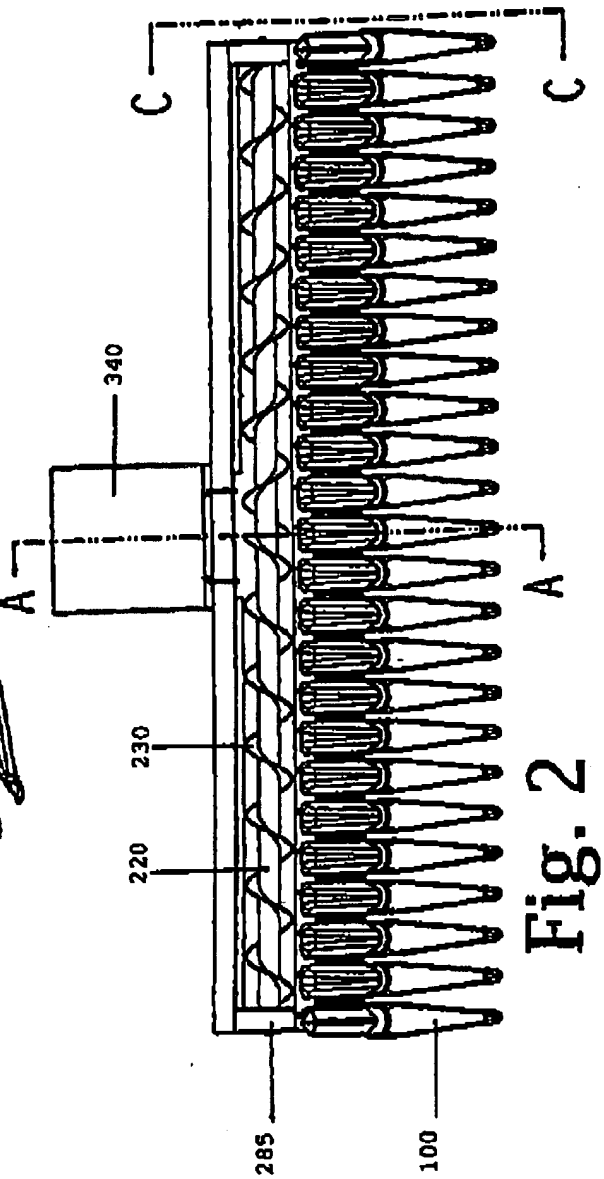


Fig. 2

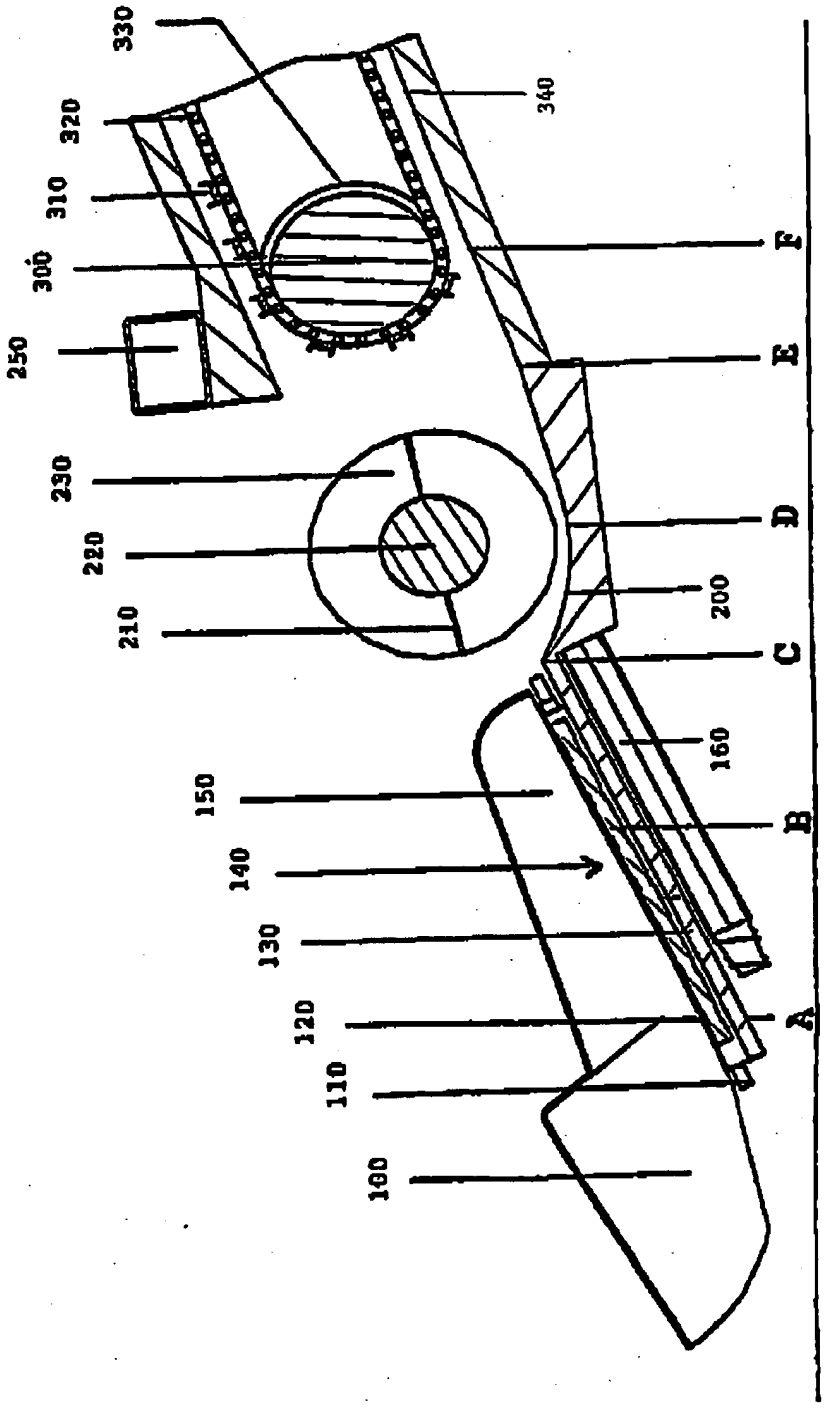


Fig. 3

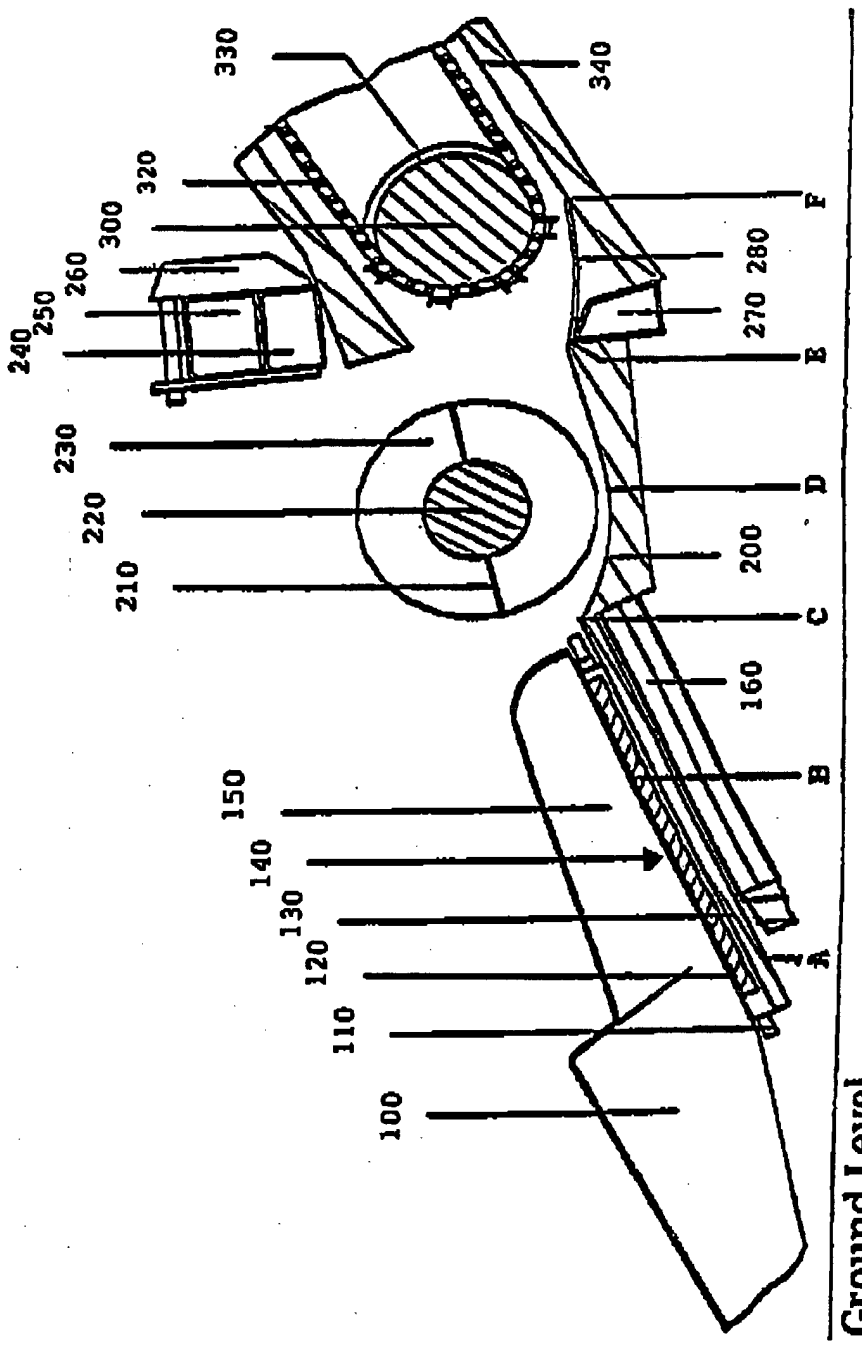


Fig. 4

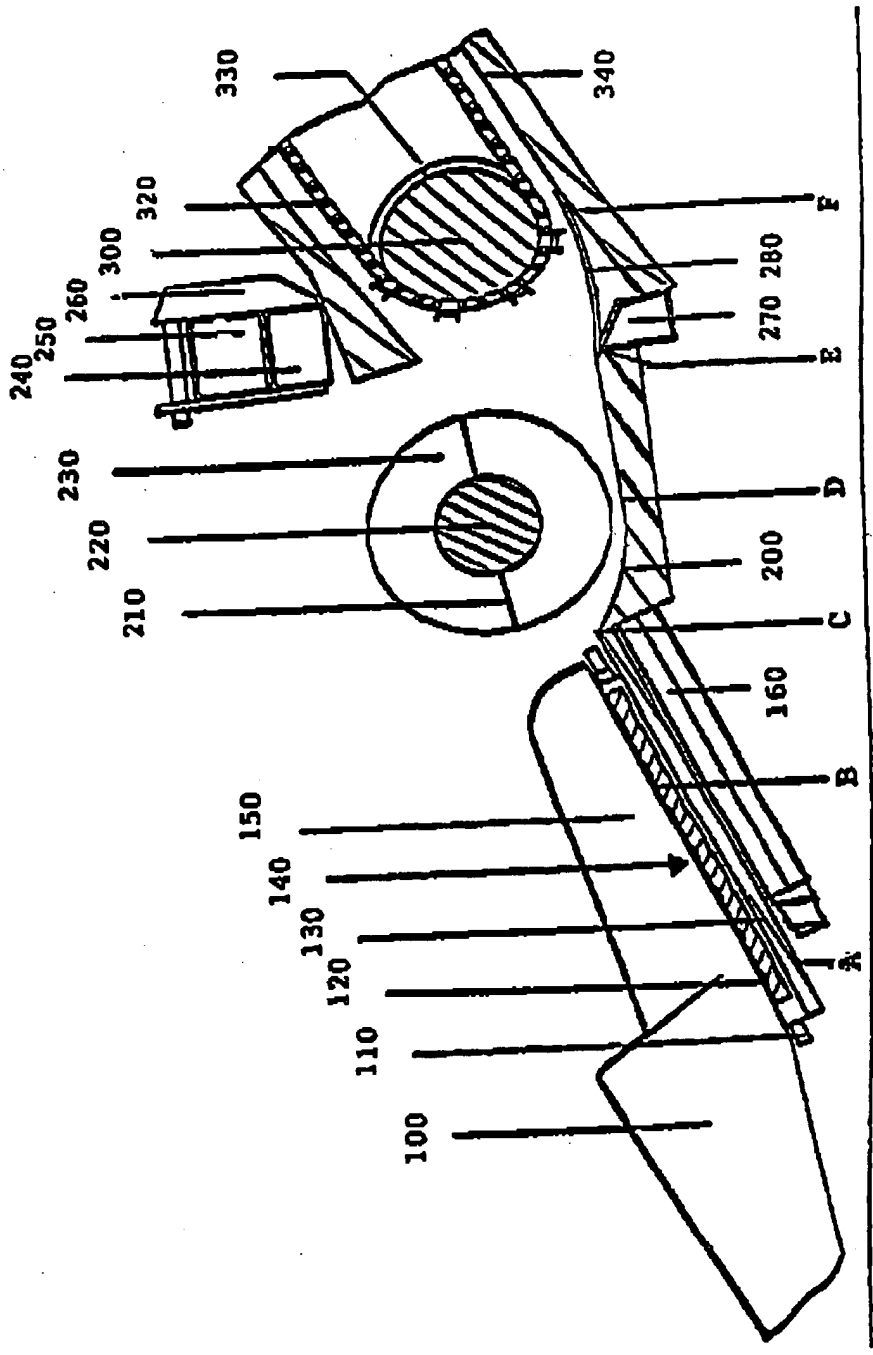


Fig. 4a

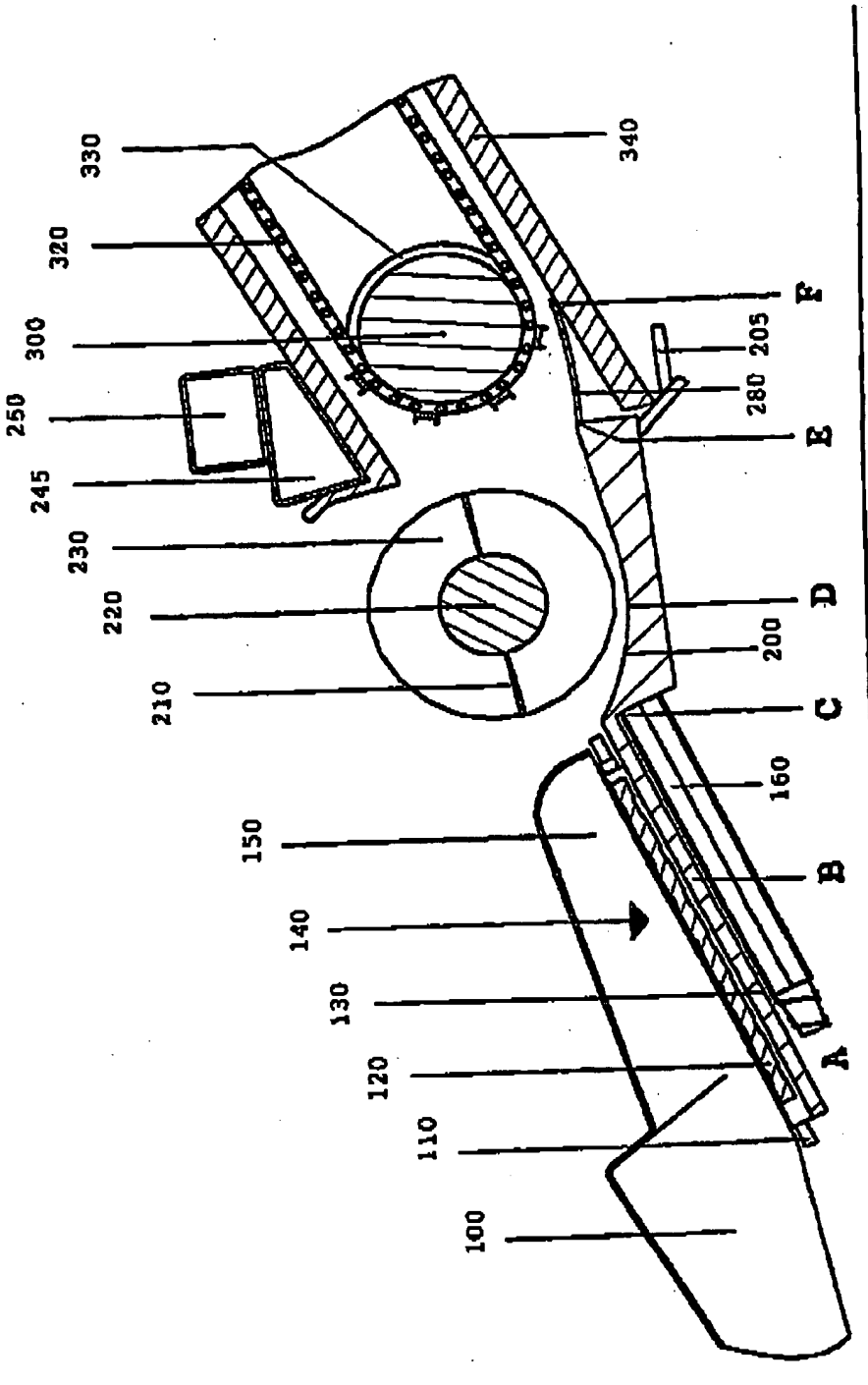


Fig. 5

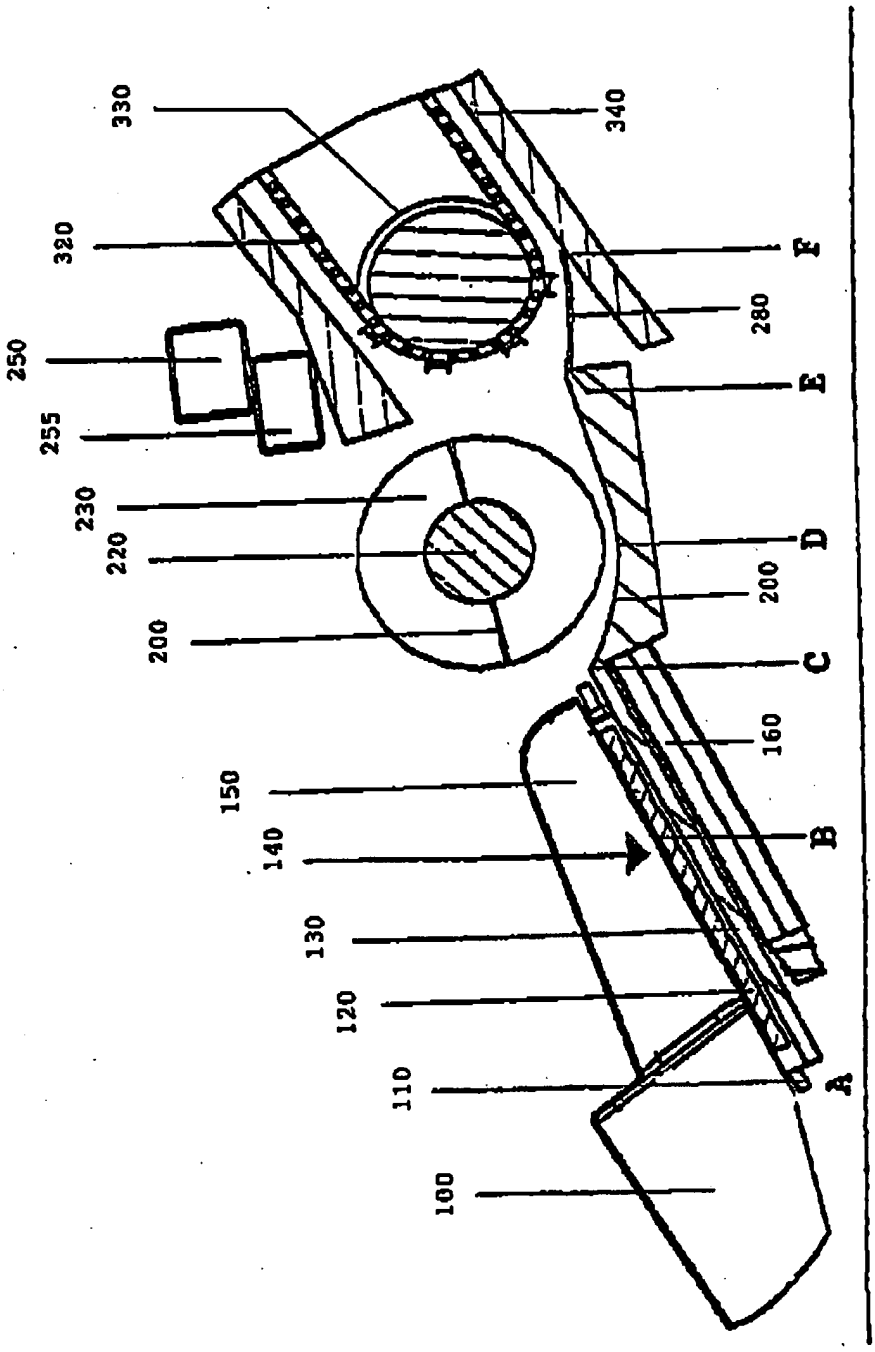


Fig. 6

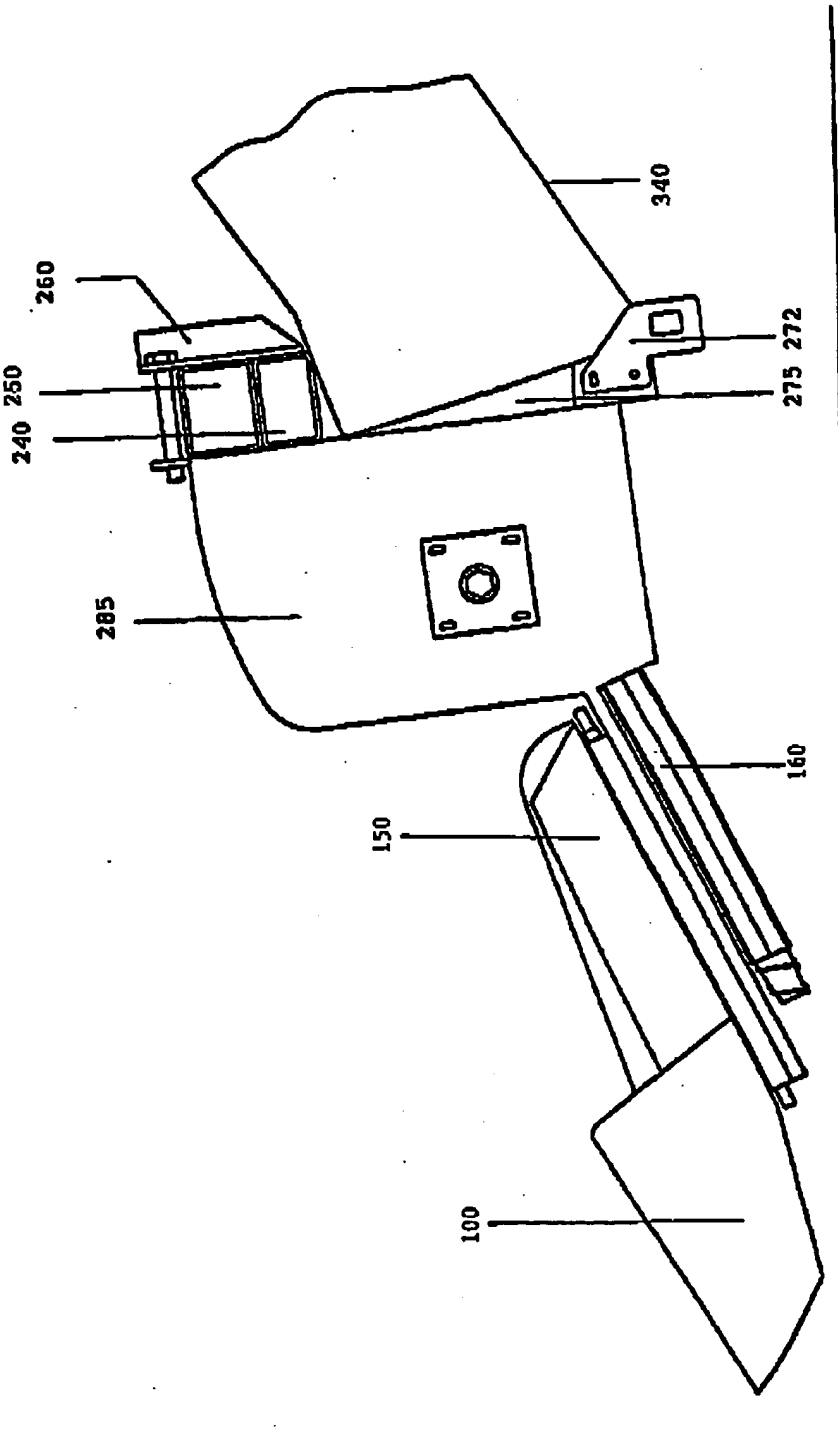


Fig. 7

APPLICATION 09,827,563 AS FILED 04/06/01

BACKGROUND OF THE INVENTION

[0001] This invention relates to corn harvesting machinery, specifically the spatial relationship between the exit area of the corn header and the retrieving area of the combine feeder house. The corn header contains a plurality of row units to strip and separate the ears from the stalk, a cross auger and trough for delivering harvested material to the feeder house. The combine feeder house contains a chain slat undershot conveying system for retrieving material from said corn head and delivering harvested material to the threshing system, of which all are existing art.

[0002] The crop dividers in combination with the gathering chain(s) and stripper plates as in the prior art have always retrieved the crop from near ground level into the row units. The stripper plates in combination with the stalk rolls will strip and separate the ears with minimal amounts of mog (material other than grain). Said gathering chain(s) then feed the heterogeneous material (ears and mog) into the cross auger and trough. The cross auger is located between the exit point of the row units and in front of the feeder house opening. The cross auger then delivers this material to the feeder house for conveying to the combine for ultimate threshing and separating.

[0003] This results in power being required to move this crop on an inclined plane at three stages of the conveying process. This first stage of the conveying process is in the row unit where there is adequate power and crop engagement for elevating the crop from near ground level into the cross auger and trough. The second stage of conveying is accomplished by the combination of the transverse cross auger and trough. The cross auger has flighting on it, which applies power to the material horizontally in the cross auger trough, thus having

changed the motion which was in line with the combine and the row unit to a lateral movement to the exit area of the cross auger trough. This material is then fed into the third stage of the conveying process, the feeder house of the combine. Thus the second stage of movement of the crop is a result of being contained against the floor and vertical side of the cross auger trough. The two lateral sections of the cross auger are oppositely wound and meet in the middle so that the horizontal movement of the crop from the right side and the left side of said cross auger meet and create a mass to be transferred to the feeder house.

[0004] At the entrance to the feeder house, the back vertical wall of the cross auger trough, in front of the feeder house, is removed so that the material may be fed from the cross auger floor into the feeder house and most of the movement imparted to the mass of material assembled at the entrance is toward the feeder house.

[0005] This movement is imparted by the cross auger rotation but is applied at the point of exit to push the mass up a severe inclined plane. Force is no longer imparted to the inert material (dead space). The material must have adequate energy imparted to propel the crop up this severe inclined floor or plane to the retrieving area of the third conveyor.

[0006] Because the flow pattern of the material is through a dead space and simultaneously severely up hill the material tends to slow down and continue to pile up as material pushes against material.

[0007] In the past thirty years two things have changed. #1 yields have doubled through improved genetics, fertilization, populations, and row spacings. #2 harvesting machines are larger with increased horse power and ground speeds which require corn headers with more row units. These two factors in

combination have significantly increased the flow rate and mass of material being delivered by said corn head and retrieved by said feeder house to a level that can now cause build up, back feeding, tossing of mog onto the deck covers, fluff, tossing of ears onto the ground, and resultant plugging in the cross auger feeder house area.

BRIEF SUMMARY OF THE INVENTION

[0008] This invention provides for improved corn head performance i.e., better material flow and less congestion and more even feeding of the harvested crop to the feeder house conveyor. Strategic realignment or changes the spatial relationship of the exit area of the corn header and the retrieving area of the combine feeder house so as to decrease the inclined plane during this flow.

[0009] This invention can theoretically reduce up to 100% the angle of the total inclined plane between the lowest point of the cross auger trough and the retrieving point of the feeder house conveyor.

[0010] This invention provides that the force and energy required to move the material from the lowest point in the cross auger trough through a dead space to its retrievable position in the feeder house is reduced.

[0011] This invention provides a flexible feeding plate, which can conform to the cylindrical path swept by the feeder house chain and slat conveyor thereby increasing the conveyors ability to successfully retrieve the maximum amount of material capable of being carried by the chain slat conveyor. The energy imparted by the cross auger to said grain is now adequate for movement. In prior art the area from the lowest point of the cross auger trough to the retrieving point of the feeder house conveyor did not conform to the cylindrical path swept

by the feeder house chain and slat conveyor. This non-conformity inhibits the ability to achieve maximum loading capabilities.

[0012] This invention provides that hoods and grills may no longer be necessary for ear retention.

[0013] This invention provides a flexible elastomeric feeder plate for a lateral constant plane and seal between the cross auger trough and the feeder house floor during lateral tilt harvesting operations such as on contoured terrain.

[0014] The invention has a smooth uninterrupted improved flow of material from the corn header through the dead space to the retrieving area of the combine feeder house. When the material is retrieved the feeder house conveyor imparts a direct and positive motion up the inclined plane into the combine. Until this invention there has been little improvement in this area of total material flow.

DESCRIPTION OF THE DRAWINGS

[0015] FIG. 1–is a plan view of a combine with a corn head attached.

[0016] FIG. 2–is a top view of the corn head, cross auger and feeder house row units.

[0017] FIG. 3–is a sectional view A-A of the row unit, cross auger, trough, feeder house, and conveyor of the prior art.

[0018] FIG. 4–is a sectional view A-A of the row unit, cross auger, trough, feeder house, and conveyor of the prior art including present invention.

[0019] FIG. 4a--is a modification of the tray or trough in FIG. 4.

[0020] FIG. 5--is a sectional view A-A of another embodiment of the invention.

[0021] FIG. 6--is a sectional view A-A of a further embodiment of this invention.

[0022] FIG. 7--is an end view of the header of this invention showing the filler plate and a different fastener between the header and the feeder house.

DETAILED DESCRIPTION OF THE INVENTION

[0023] The operation of corn heads incorporating this invention are similar to that of the operation of corn heads of the prior art as illustrated in FIGS. 1, 2, and 3. In FIGS. 3, 4, 4a, 5 and 6 the corn stalks are engaged by the gathering chains 120 guided into the snapping slots 140 formed by stripper plates 130. The snapping rolls 160 pull the corn stalks through the snapping slots 140 and the ears are removed from the stalks, point B, as they come into engagement with the stripper plates 130. The ears are then carried rearwardly by the gathering chain fingers 110 and deposited in the trough 200 that contains the auger 220 with flighting 230.

[0024] The power to drive the gathering chains 120 and the snapping rolls 160 is provided from a main drive shaft through a gear box as described in prior the art.

[0025] As shown in FIG. 3, the crop must proceed from point A, up the inclined plane by the power imparted to it by the gathering chains 120 through point B to point C where the crop is deposited into the auger trough 200 for lateral movement to the exit point E area of the auger trough 200 by the auger 220

having flighting 230 thereon. The primary movement of material by the flighting is horizontal so energy is imparted to the material i.e., the ears of corn plus mog primarily rearwardly and laterally. The auger trough 200 has its vertical rear side removed when it is opposite the feeder house 340 and the feeder house chain 320. Thus the material has had some energy imparted to it from the gravitational movement from point C to point D, which is the low point of the travel of the material in the cross auger trough 200. Now the material must be, as shown in FIGS. 3, 4, 4a, 5, and 6, forced by the cross auger from position D over the edge of the cross auger trough E and to the retrieving point F of the feeder house 340. The feeder house chain 320 can not be too close to the cross auger flighting 230 because of the interference which would result from two parts moving in opposite directions and powered for such movement.

[0026] Thus the material which has accumulated at the exit point is forced laterally i.e., rearwardly up the inclined plane by the motions of the flighting 230. This motion must overcome gravity, friction, and the weight of the material being pushed by a force that is not totally in line with the direction of movement desired, as is the case of force and movement when it reaches the feeder house chain 320.

[0027] This invention as shown in FIGS. 4, 4a, 5, and 6 spatially realigns specifically the cross auger trough 200 and the cross auger portions of the header 220 and the entry to the feeder house 340. There is a resultant improved movement of material with the same power by this realignment.

[0028] The realignment provides reduced energy requirements for propelling the crop or to assist in propelling the crop in its movement from the cross auger trough 200 to the feeder house 340 where it is engaged by the feeder house chain 320 and slats 310 for further powered movement. This realignment is

accomplished as shown in FIGS. 4, 4a, 5, and 6 by inserting a spacer 240, 245 or 255 to elevate the header bar 250 vertically. The spacer 240 is attached to the corn head frame 250 by means of a bracket 260 which may be held by similar and any well-known fastening means to secure 250 and 260 together. Spacers 245 and 255 are attached by well-known fasteners but not shown.

[0029] In FIGS. 4 and 4a, when spacer 240 is inserted the entire corn head is lifted vertically so that the flighting 230 and paddles 210 will possibly interfere with the feeder house chain 320. Thus to permit the raising of the entire corn head, point E must be moved laterally in a direction away from the feeder house chain 320. This lateral movement is accomplished by the insertion of a second spacer 270. This spacer is inserted between the auger trough 200 and frame of the feeder house 340 at its lowest portion. To maintain insert or spacer 270 in its position a fastening means must be provided. Spacer 270 may be fastened to the cross auger 200 trough by any well-known means such as bolts or welding.

[0030] In order to prevent the discharge of the material onto the ground through the void created by insertion of spacer 270 a flexible or rigid filler plate 280 must be inserted between the cross auger trough 200 and the feeder house tray 340 and attached with common fasteners.

[0031] FIG. 4a shows the invention with lowering only to the aft portion of auger trough 200 in front of feeder house 340.

[0032] A further embodiment of this invention is shown in FIG. 5 wherein the horizontal and vertical spacers are combined in one unit as spacer 245. This spacer 245 is formed as shown in FIG. 5 so that it both horizontally and vertically changes the spatial relationship between the feeder house 340 and the exit of cross auger floor 200. This embodiment could be done if it is desirable with some

headers on different combine to move the auger flighting 230 closer to the feeder house chain 320. A flexible filler plate 280 is still necessary, which then forms a cylindrical surface to be swept by the path of the feeder house conveyor chain 320. A fastening member is provided to hold the cross auger trough 200 and the feeder house 340 together by a fastener means 205 to ensure that the members remain in position at all times, including park.

[0033] A further embodiment is shown in FIG. 6 wherein the vertical spacer 255 is inserted between the frame 250 and the feeder house 340. This spacer 255 is fastened to the corn head frame 250 in the same manner as the spacer 240 in FIG. 4. There is also shown in FIG. 6 the flexible feeder plate 280, which conforms to the cylindrical path swept by the feeder house chain 320. The flexible feeder plate 280 also maintains a seal between the trough 200 and the feeder house 340 during lateral tilt.

[0034] FIG. 7 is an end view of the invention showing the spacer 240, frame member 250, feeder house 340, and the filler plate 275 between the feeder house 340 and the rear vertical wall of the cross auger trough 200. The corn head and feeder house are connected by fastening means 272 to ensure that they remain in position at all times including park.

[0035] Having described the preferred embodiment, other features of the present invention will undoubtedly occur to those versed in the art, as will numerous modifications and alternations in the embodiments of the invention illustrated, all of which may be achieved without departing from the spirit and scope of the invention as defined in the appending claims.

CLAIMS

What is claimed is:

1. An improved arrangement of the spatial relationship between the functional elements of a row crop harvester attachment for mounting on and co-acting with the functional elements of a mobile threshing unit comprising:
a) a row crop harvester having a main frame attachment mounted to a mobile harvesting threshing unit;
b) a first conveyor system in said row crop harvester including a power source, said power source connected to a plurality of row units mounted on said main frame for removing grain from the stalks and conveying the material including grain up a first inclined plane to exits from said first conveyor system;
c) a second conveyor system, at right angles to said first conveyor system, including a power source for receiving the harvested material from the exits of said first conveying system;
d) said second conveyor system conveying said material from the exits of said first conveyor system to an area at the center of the plurality of row units for exit from said second conveyor system;
e) said second conveyor system having two inclined plane surfaces between the entrance and the exit;
f) the inclined plane surfaces at the entrance to and the exit from said second conveyor system are inclined equally and in a opposite direction when said second system is perpendicular to the ground;
g) an open area connected by an inclined plane between the exit of the second conveying system to entrance of said mobile threshing unit;
h) a third conveying system including a power source in said mobile threshing unit for retrieving material in said open area and delivering the material to the

thresher mechanism.

2. The invention in accordance with claim 1 wherein said second conveying system comprises an auger with flighting and a trough containing said auger.

3. The invention in accordance with claim 2, wherein said auger flighting is reversed on opposite sides of the centerline of said auger and said trough ends at a center area.

4. The invention in accordance with claim 1, wherein said first and second conveyor systems are moved vertically upwardly with relation to said third conveying unit, an amount sufficient to reduce the angle of the vertically inclined plane from said second conveying system exit to the entrance of said third conveying system.

5. The invention in accordance with claim 1, wherein horizontal adjustment of said first and second conveyor systems with respect to said third conveyor system is accomplished by moving laterally the connection of the header unit relative to the mobile threshing unit to reduce the angle of the inclined planes.

6. The invention in accordance with claim 1, wherein horizontal adjustment of said first and second conveyor system with respect to third conveyor system is accomplished by moving laterally the connection of the header unit relative to the mobile threshing unit to reduce distance between exit of said second conveyor system to the third conveyor system.

7. The invention in accordance with claim 4 where in said vertical movement between said first and second conveyor systems and said third conveying system is by a spacer element.

8. The invention in accordance with claim 5, wherein said horizontal movement between said first and second conveyor system and said third conveyor system is by a spacer element.

9. The invention in accordance with claim 5, wherein the spacer is rectangular in shape.

10. The invention in accordance with claim 5, wherein the spacer is a trapezoidal piece between the header unit and the threshing unit.

11. The invention in accordance with claim 4, wherein a feeder plate is attached to said second conveyor unit bridging between said second conveyor unit and said third conveying unit.

12. The invention in accordance with claim 11, wherein said feeder plate is made of elastomeric material to conform to variations in movement between the second and third conveying units.

13. The invention in accordance with claim 5, wherein a filler plate is added at the side of resultant the opening between the second conveyor system and the third conveying system.

14. The invention in accordance with claim 5, wherein a feeder plate is attached to said second conveyor unit bridging between said second conveyor unit and said third conveying unit.

15. The invention in accordance with claim 14, wherein said feeder plate is made

of elastomeric material to conform to variations in movement between the second and third conveying units.

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United States Patent [19]

Rayfield

[11] Patent Number: 5,784,869

[45] Date of Patent: Jul. 28, 1998

[54] CORN HEAD AUGER TROUGH DIVIDER

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[73] Assignee: New Holland North America, Inc., New Holland, Pa.

[21] Appl. No.: 792,821

[22] Filed: Jan. 31, 1997

[51] Int. Cl.[6] A01F 12/00

[52] U.S. Cl. 56/119; 56/71; 56/94; 56/DIG. 5; 460/114; 460/119

[58] Field of Search ..... 56/119, 94, DIG. 5, 56/71, 73, 76, 99, 59, 66, 69, 78, 82, 88, 98, 106, 108; 460/114, 119, 901

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3,244,271	4/1966	Wenning	198/217
3,503,190	3/1970	van der Lely	56/23
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4,617,787	10/1986	Eguchi et al.	56/14.6
5,724,797	3/1998	Wagstaff et al.	56/119 X

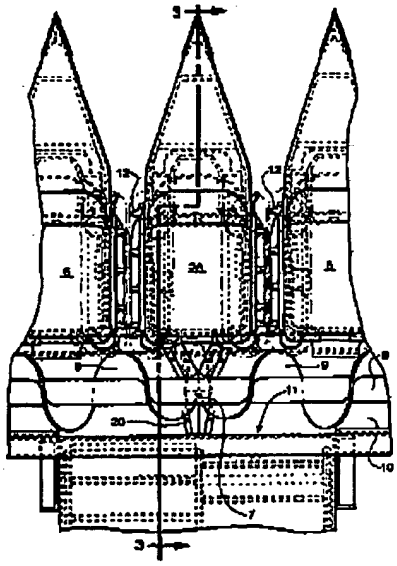
Primary Examiner—Terry Lee Melius

Attorney, Agent, or Firm—Larry W. Miller; J. William Stader; Frank A. Seemar

[57] ABSTRACT

The disclosure relates to a corn head auger crop divider located in the auger trough of a corn head. The divider is positioned between the center row divider and center of the feeder house opening. The divider does not contact the transverse auger and transverse auger flighting. The divider consists of a rear divider partially nested within the front divider. The front divider has a triangularly shaped top region. This orients a pair of side embankments so as to smoothly alter the flow of corn crop. In operation, the corn ears are pushed into the auger trough by the gathering chains within the row divider. The transverse anger pushes the corn crop to the center of the corn head where it contacts the side embankment of the front divider. The side embankment changes the direction of the corn crops flow so that it is directed into the feeder house opening.

17 Claims, 5 Drawing Sheets



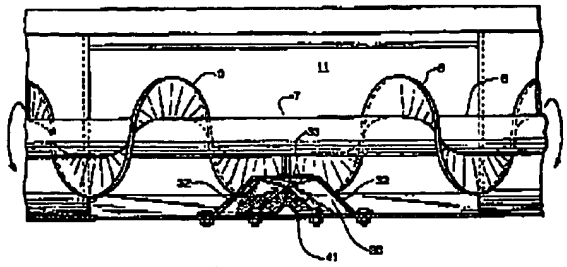


Fig. 1

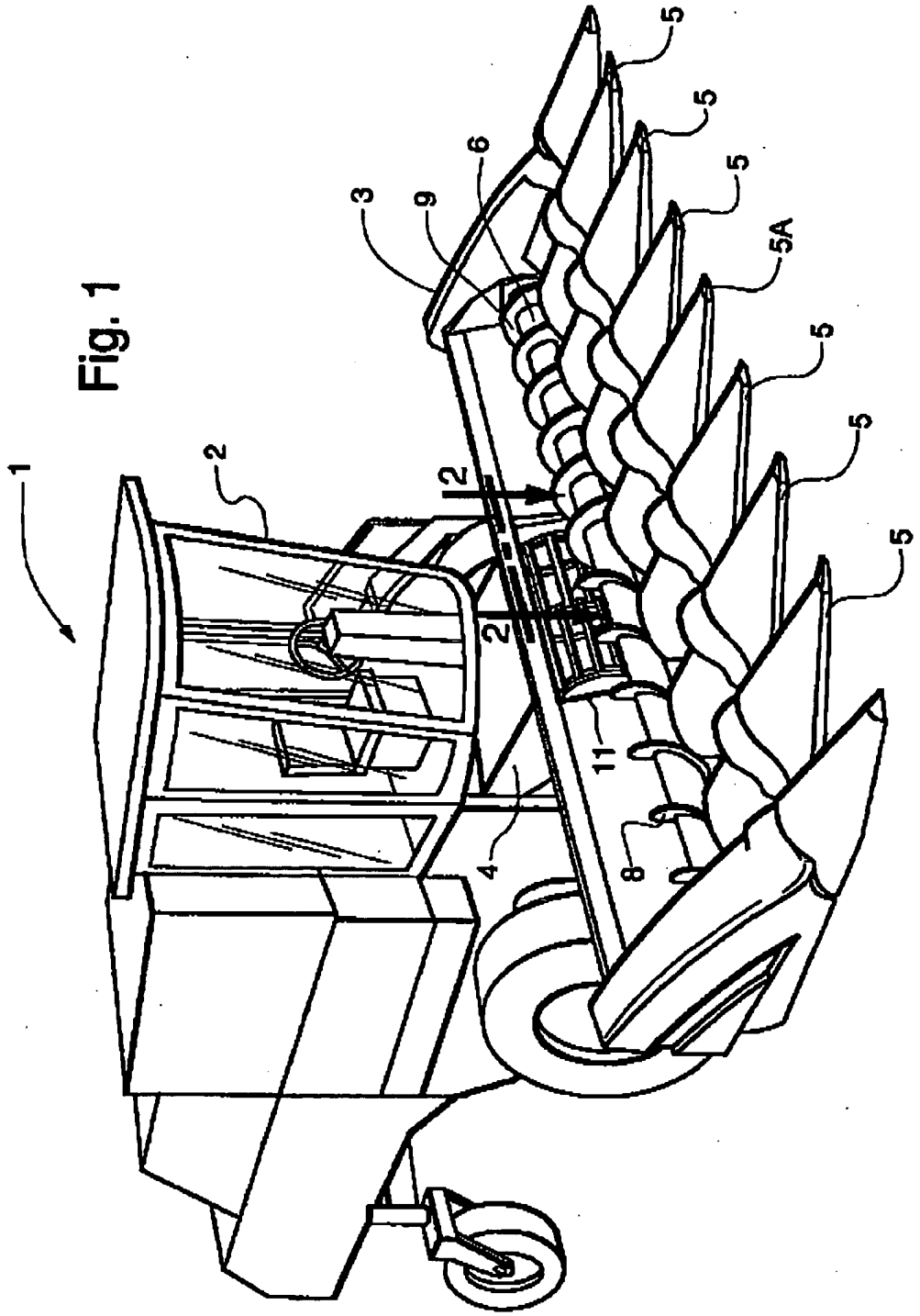
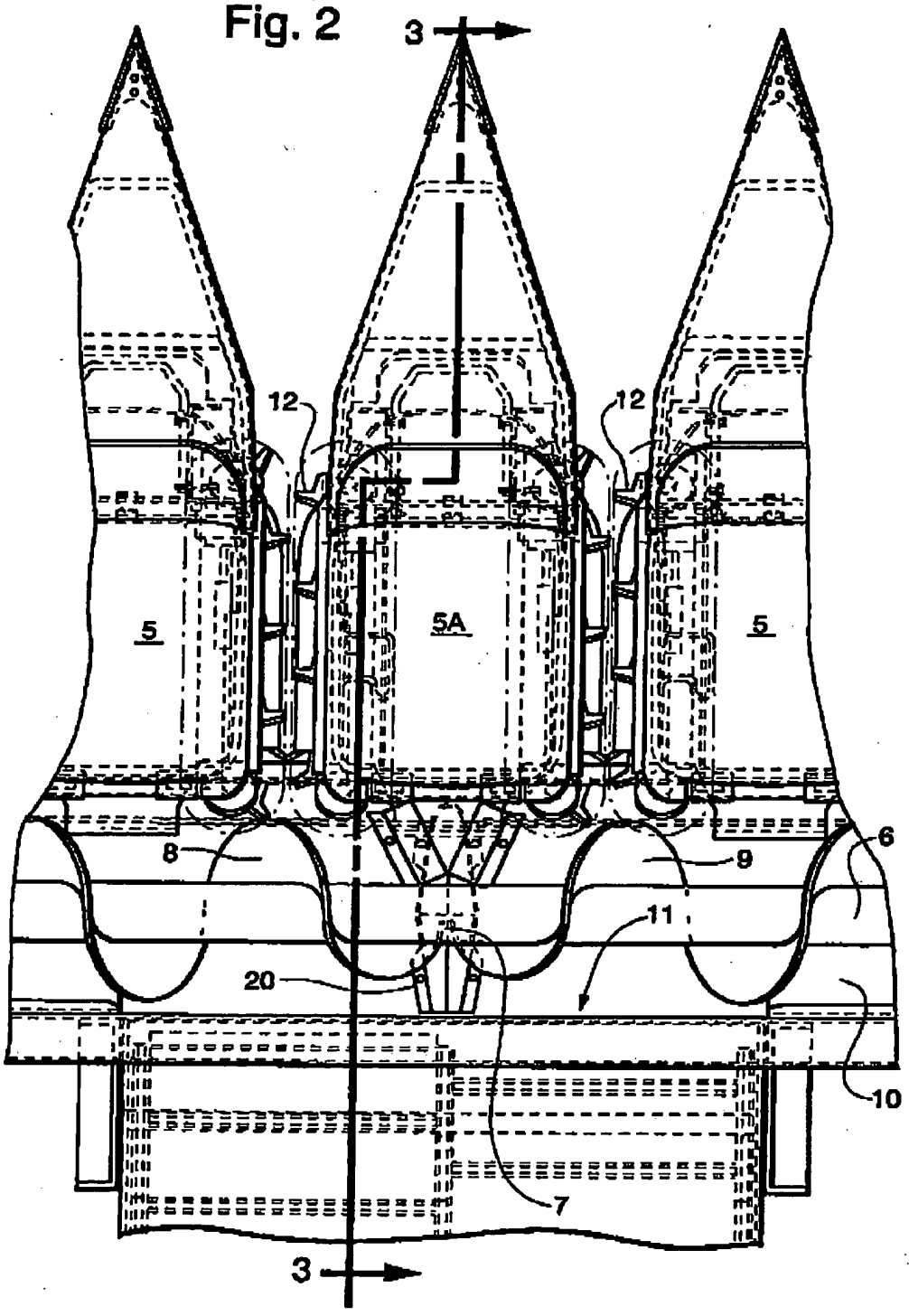


Fig. 2



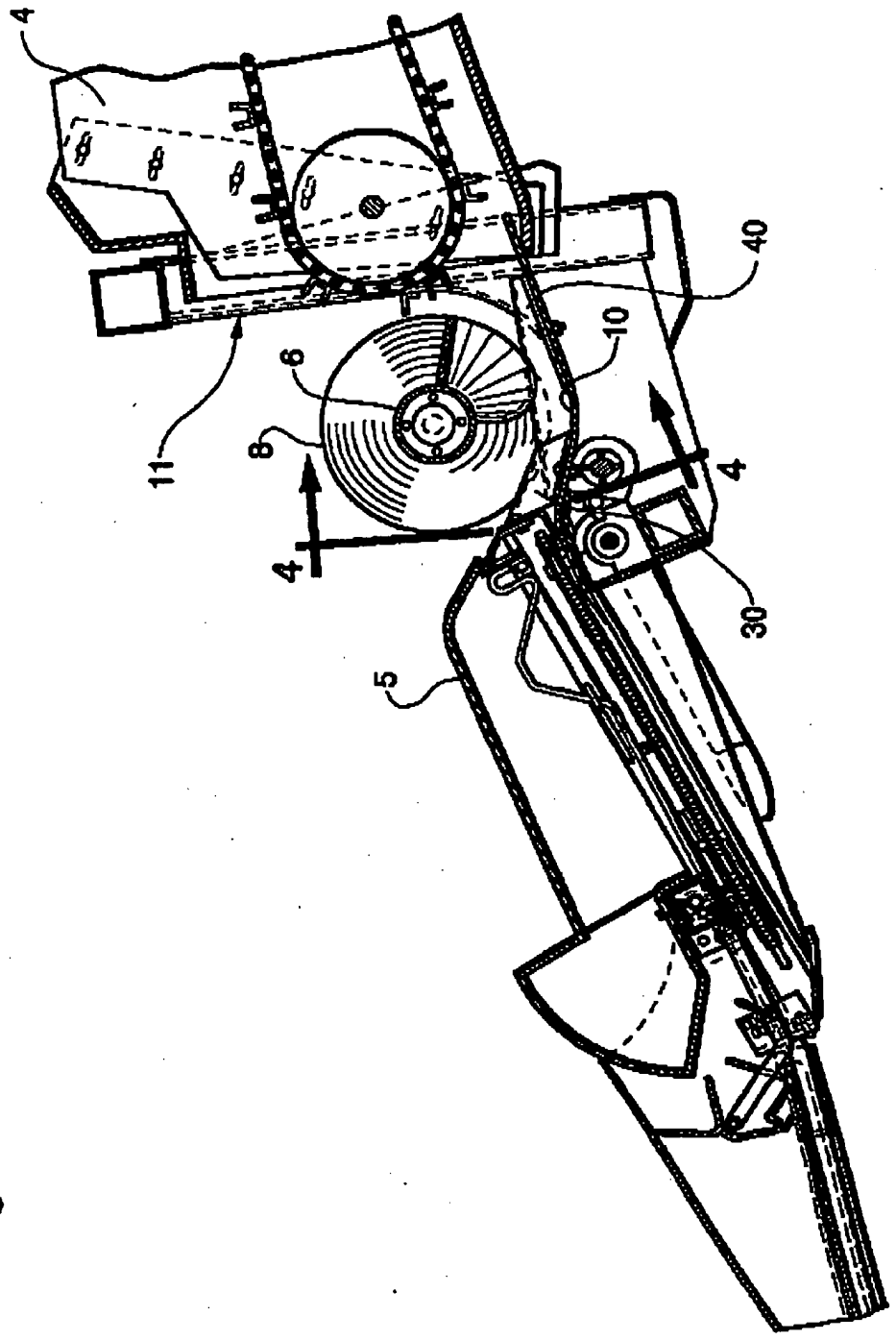


Fig. 3

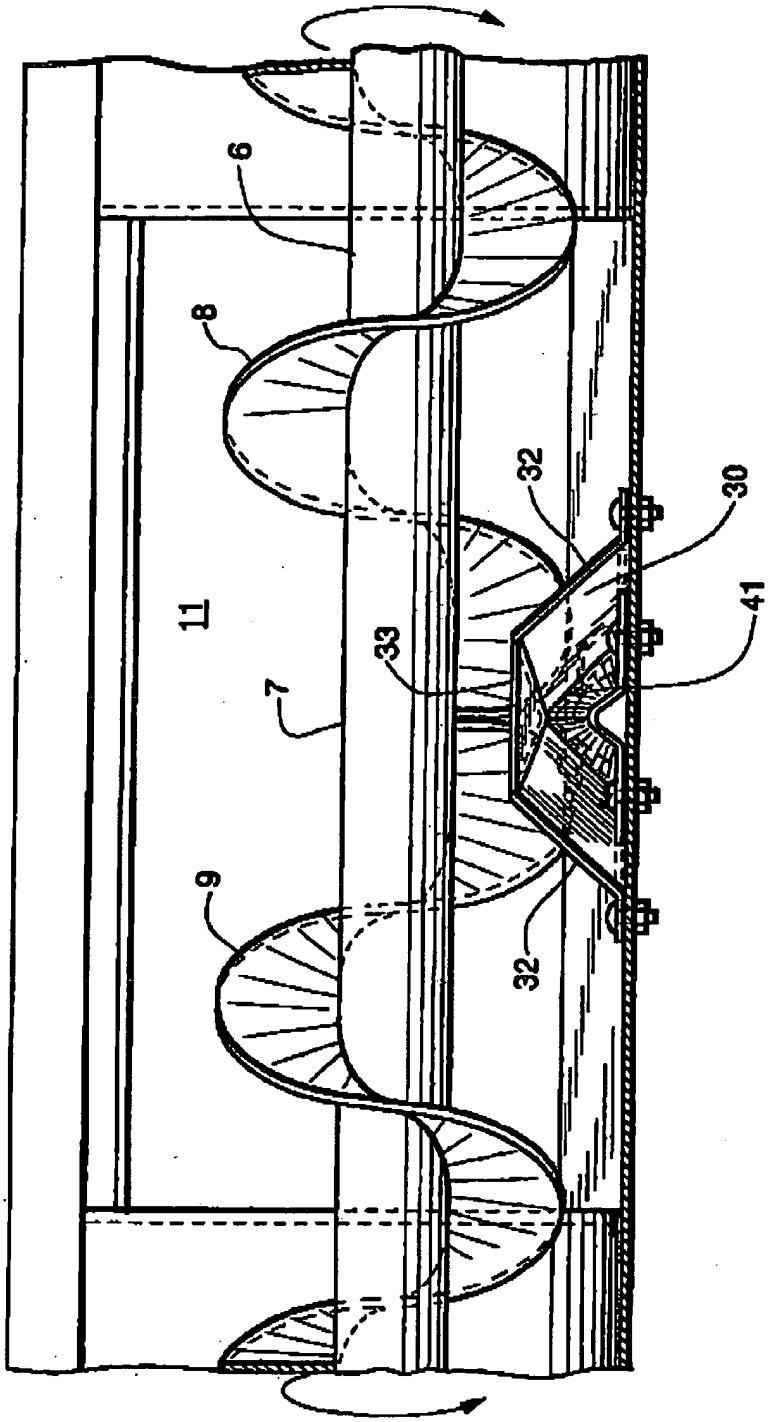
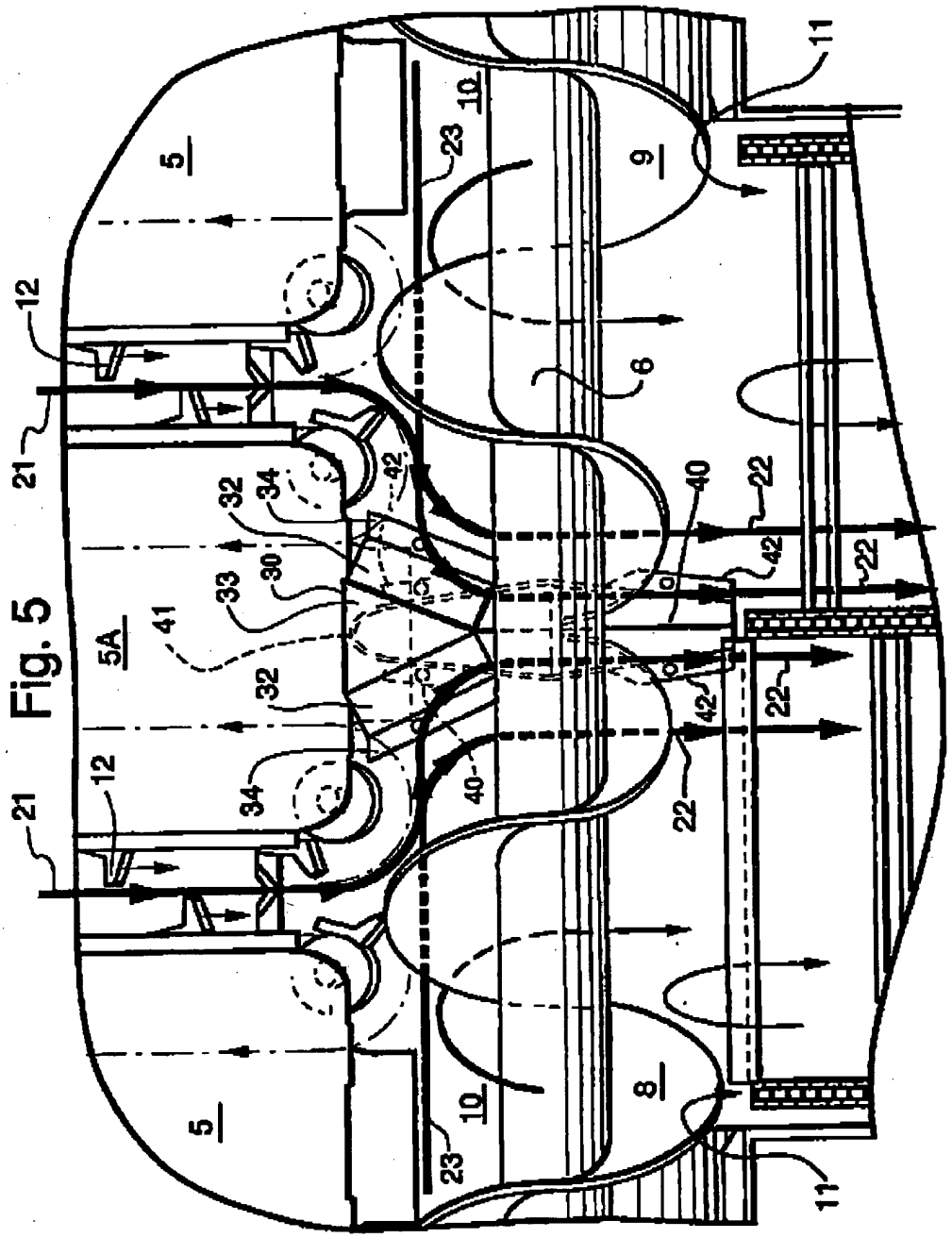


Fig. 4



CORN HEAD AUGER TROUGH DIVIDER

BACKGROUND OF INVENTION

1. Field of Art

This invention relates to the improvement of machines used in the harvesting of corn. More particularly, it relates to an auger trough divider on a corn head of a twin rotor harvesting combine.

2. Description of Prior Art

Mechanical harvesting of corn has taken place for decades. However, efforts continue in the attempt to make corn harvest operations more efficient and effective. A corn harvester generally includes a corn head which removes the ears from the stalks. The ear of corn is then fed into a separator or thresher which separates the grains of corn from all other materials. A corn head actually consists of several row assemblies, one for each row which is being harvested in a single pass over the field. Typically each divider covers a pair of stalkrolls, stripper plates, gathering chains and gear boxes. After the stalkroll and stripper plate removes the ear from the cornstalk, the gathering chain lifts and pushes the ear into the auger trough of the corn head. Typically, the trough is contoured to receive a larger quantity of corn ears. Above the trough of the corn head is a transverse auger. Affixed to the auger are two sets of helical flightings. A left-handed flighting pushes the corn in the trough from the left side of the corn head to the center of the corn head. A right-handed flighting pushes the corn in the trough from the right side of the corn head to the center of the corn head. Located at the center of the corn head is the opening to the elevator or feeder house. The corn ears are forced into the feeder house opening. The feeder house lifts the ears into the threshing and separation areas of the combine. The corn is separated from the ear and husk by a rotor.

Currently, there are several drawbacks to the conventional corn head. Specifically, it is difficult to re-orient the flow of the corn travelling in an auger trough. After the gathering chain places the corn crop into the auger trough, the transverse auger pushes the crop along the axis of the transverse auger. Once the corn crop reaches the center of the corn head, it must be redirected into the feeder house opening. However, as the flightings push the corn ears into the center of the corn head, the corn flow gains momentum. The corn ears from the right side of the corn head and the left side of the corn head impact at the corn head center. Frequently some the corn ears are pushed to the opposing side of the corn head, flipped over the top of the transverse auger or thrown out of the corn head altogether. Several approaches have been taken to minimize the loss of the corn ears. First, the rate at which the corn crop is cut can be reduced, thus limiting the corn entering the corn head to manageable rate. However, this increases the length of harvesting operations. Second, several fingers have been inserted onto the transverse auger in front of the opening to the feeder house. These fingers push the crop into the feeder house. However, these fingers can damage the corn ears. Attempts to minimize the contact of the fingers on the corn ears have resulted in many patents.

The prior art illustrates these and additional difficulties. U.S. Pat. No. 3,503,190 discloses a harvesting machine with a corn head having two portions which pivot around a center 'elongated' element. The portions are designed to be folded at the pivot during transport. Unfortunately, it is necessary to maintain duplicate drive mechanisms for the transverse auger and there is no provision for a row divider used on the existing corn heads.

U.S. Pat. No. 3,794,046 discloses a header crop divider for an axial flow combine having side-by-side axial flow units. A cutting means 68 is affixed to the transverse auger 62. Channel members with a knife section 70, 72 and 74 are affixed to the corn head trough. These knives cut the crop as it approaches the center of the corn head. The main drawback to this approach is that it damages the crop. Further this approach has a limited ability to redirect the flow of corn crop towards the feeder house opening.

U.S. Pat. No. 3,244,271 discloses an auger for axially moving and laterally discharging material. The transverse auger has a two cone portions located at the auger's center. The cones restrict the crop flow and force the flow into the feeder house opening. However, modifying the transverse auger is costly, also the crop is damaged by the cones. Further, such an approach may be ineffective for corn ears.

U.S. Pat. No. 4,617,787 discloses a combine harvester machine and head with several conveyors for pushing the crop into the auger trough. This mechanism is mechanically complex. Further it is unclear whether the design can accommodate the row dividers of a corn head. Also the dividers into this device are actually the covering of the conveyor mechanism.

Consequently, the need exists for a corn head which can ensure the smooth flow of corn ears from the auger trough into the feeder house opening.

OBJECTS OF THE INVENTION

It is an object of the present invention to provide a corn head auger trough divider which can smoothly alter the flow of corn ears traveling in the auger trough and into the feeder house opening.

It is a further object of the present invention to provide an auger trough divider which can be easily and inexpensively installed onto an existing corn head trough.

It is a further object of the present invention to provide an auger trough divider which can conform to the curved contours of an existing corn head trough.

It is a further object of the present invention to provide an auger trough divider which can be installed behind the row divider of a conventional corn head.

It is a further object of the present invention to provide an auger trough divider which can be installed in front of the feeder house opening and beneath the center of the transverse auger.

It is a further object of the present invention to provide a two piece auger trough divider which consists of a front divider and rear divider.

It is a further object of the present invention to provide a front divider which re-orients the flow of the corn crop from traveling along the axis of the transverse auger axis to flowing into the feeder house opening.

It is a further object of the present invention to provide an auger trough divider which divides the corn crop equally for threshing in a twin rotor harvesting combine.

It is a further object of the present invention to provide a means for altering the flow of corn ears without having an attachment to the transverse auger.

SUMMARY OF THE INVENTION

The invention overcomes the deficiencies of the prior art. The invention provides a corn head auger trough divider. The divider is located between the center row divider and the center of the feeder house opening. The divider is affixed

beneath the transverse auger and does not contact the auger flighting. The divider consists of two parts—a front divider and rear divider which are contoured to the curve of the auger trough. The front divider is directly behind the center row divider and has a top region which is triangularly shaped. The creates a pair of side embankments which the corn crop contacts. This shifts the flow of corn crop from travelling along the axis of the transverse auger to directly into the feeder house opening. The rear divider is partially nested beneath the front divider.

BRIEF DESCRIPTION OF THE DRAWINGS

The advantages of this invention will be apparent upon consideration of the following detailed disclosure of the invention, especially when taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a general view of a corn harvester combine with a corn head containing the present invention.

FIG. 2 is an enlarged overhead view taken along line 2—2 of FIG. 1 showing the corn head auger trough, feeder house opening, the row divider and auger trough divider.

FIG. 3 is an enlarged sectional side view taken along line 3—3 of FIG. 2 showing the auger trough, feeder house opening, the row divider and auger trough divider.

FIG. 4 is an enlarged sectional view taken along line 4—4 of FIG. 3 showing the front divider, transverse auger and auger trough.

FIG. 5 is an enlarged overhead view showing the flow of the corn crop from the gathering chains to the feeder house opening.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings, it is possible to observe the major elements and general operation of the present invention. Left and right references are used as a matter of convenience and are determined by standing at the rear of the combine and facing the forward end in the normal direction of travel. Likewise, forward and rearward are determined by normal direction of travel of the combine. Upward or downward orientations are relative to the ground or operating surface. Horizontal or vertical planes are also relative to ground.

The invention is located on the corn head 3 of a corn harvester or combine 1. FIG. 1 illustrates a conventional twin rotor combine. Typically, there is a corn head 3 attached by the feeder house 4 or elevator to a combine 1. The row dividers 5 move between rows of corn and the corn stalks are drawn rearward by a front auger and then cut by the stalkroll. The gathering chains 12 feed the ear of corn backwards 21 and into the auger trough 10. The transverse auger 6 with a left-handed flighting 8 and a right-handed flighting 9 is located above the auger trough 10. The transverse auger flighting (8 or 9) moves the corn into the center of the corn head to the feeder house opening 11. The ears of corn are moved through the feeder house into a threshing system located in the combine 1. The corn kernels are then separated from the ear. The kernels of corn are then moved and stored in a grain tank located at the top of the combine. These are discharged later. The chaff or trash is discharged from the rear of the combine 1. An operator drives the combine from a glass cab 2 with a chair and steering column. From the cab, the operator can observe most of the corn head 3 and combine 1 functions.

The present invention 20 is located at the center 7 of the corn head 3 within 5 the auger trough 10 (sometimes

referred to as the header floor). The divider 20 is positioned in front of the feeder house opening 11 and behind the center row divider 5a. The divider 20 is designed to re-orient the transverse grain flow 23 to a rearward grain flow 22. A rearward grain flow 22 results in a more effective entrance of the crop into the feeder house opening 11.

The divider 20 actually consists of two elements—a front divider 30 and a rear divider 40. The rear divider 40 extends the width of the auger trough 10. The base of the rear divider 40 is contoured to fit in the auger trough 10. There are four rear tabs 42 which can be altered to match the slope of the auger trough 10. There are openings in each rear tab 42 allowing a fastener to be inserted and attach the rear is divider 40 to the auger trough 10. The rear divider 40 is placed beneath the transverse auger 6. The flighting 8 or 9 at the center of the transverse auger 6 may be trimmed or reduced so as to not contact the top of the rear divider 40. The rear divider 40 is centered directly behind the center row divider assembly 5a. The rear divider also is centered on the feeder house opening 11. This location splits the crop flow evenly. The crop from the left side of the corn can flow into the left side of the feeder house opening 11. In a twin rotor combine, the crop from the left side will be threshed and separated by the left rotor. Likewise the crop from the right side of the corn head is processed by the right rotor. This helps ensure a more balanced distribution of the crop throughout the entire threshing system.

The front divider 30 is located just behind the center row divider 5a. A portion of the rear divider 40 is nested 41 within the front divider 30. The front divider 30 has two front tabs 34 at its' base. The tabs 34 are used to fasten the front divider 30 to the auger trough 10. Again, the tabs 34 are designed to match the contour of the auger trough 10. The top region 33 is triangularly shaped and is generally positioned horizontal to the ground. Attached to the top region 33 are a pair of rectangularly shaped side embankments 32. The side embankments 32 are generally positioned vertically relative to the ground. The side embankments 32 turn the flow of crop 23 from travelling along the transverse auger axis to travel directly 22 ('rearward travel') into the opening of the feeder house 11. Again, like the rear divider 40, the front divider 30 do not contact the flighting 8 or 9 on the transverse auger 10. Also, the front divider 30 is centered on feeder house opening 11.

In operation, the corn head 3 passes over a row of corn crop. The processing equipment within the row divider 5 cuts and removes the ear from the corn stalk. The gathering chains 12 then push the corn ears 21 into the auger trough 10. The flighting 8 or 9 on the transverse auger 6 move the corn ears into the center of the corn head 7. The corn ears first contact the side embankment 32 of the front divider 30. The corn ear then continues towards the rear divider 40 and into the feeder house opening 11. The feeder house 4 then carries the corn ears into the threshing and separating rotors within the combine 1.

The present invention is designed to be used in conjunction within an auger trough of a conventional corn head. However, the divider could be installed on similar configurations.

It will be obvious to those skilled in the art that various changes may be made without departing from the scope of the invention and the invention is not to be considered limited to what is illustrated in the drawings and described in the specification.

What is claimed is:

1. In a corn head operationally attached to a combine by a feeder house, said corn head having a plurality of row

dividers, each row divider extending forward of an auger trough said row divider containing a stalkroll, a stripper plate, a gathering chain and a gear box. said corn head also having a transverse auger with a left handed flighting and a right handed flighting, said auger cooperating with the auger trough to move a flow of corn crop to the feeder house, the improvement comprising a divider Generally perpendicularly affixed to the trough between the row divider and the feeder house, said divider located beneath the transverse auger and between the left handed flighting and right handed flighting, wherein the divider further comprises a rear divider partially nested within a front divider, said front divider affixed behind a center row divider, whereby a flow of crop material is changed by the divider so as to enter the feeder house in a rearward manner.

2. The improvement described in claim 1, wherein the front divider further comprises a triangularly shaped top region and a plurality of rectangularly shaped side embankments, each said side embankment affixed to the top region.

3. The improvement described in claim 2, wherein the top region is generally horizontal and the side embankment is generally vertical, whereby the corn crop flows into the side embankment and is directed in the feeder house.

4. A corn head auger trough crop divider for a corn head on a corn harvester, comprising:

a. a corn head operationally connected to a combine by a feeder house, said corn head having a trough, a row divider and a transverse auger;

b. a divider affixed to the trough between the row divider and the feeder house and below the transverse auger; and

c. said divider having a rear divider partially nested within a front divider, whereby a transverse crop flow contacts the divider and is shifted into a rearward crop flow which enters the feeder house.

5. The corn head auger trough crop divider as defined in claim 4, wherein the transverse auger has a left-handed flighting and right-handed flighting, said flighting for moving the transverse crop flow to a center of the transverse auger, said flighting and said auger not contacting the divider.

6. The corn head auger trough crop divider as defined in claim 5, wherein the trough is curved, and said divider corresponds to the curve.

7. The corn head auger trough crop divider as defined in claim 6, wherein the rear divider further compdises of a plurality of rear tabs, wherein each rear tab is affixed to the auger trough.

8. The corn head auger trough divider as defined in claim 7, wherein there are four rear tabs.

9. The corn head auger trough crop divider as defined in claim 8, wherein the front divider further comprises a top region, said top region being triangularly shaped.

10. The corn head auger trough crop divider as defined in claim 9, wherein the top region is generally horizontal.

11. The corn head auger trough crop divider as defined in claim 10, wherein the front divider further comprises a plurality of side embankments, each side embankment affixed to the top region, and each side embankment is generally rectangularly shaped.

12. The corn head auger trough divider as defined in claim 11, wherein the side embankment further comprises a plurality of front tabs each front tab being affixed to the auger trough.

13. The corn head auger trough divider as defined in claim 12, wherein there are two front tabs.

14. The corn head auger trough divider as defined in claim 13, wherein the side embankment is generally vertical.

15. The corn head auger trough crop divider as defined in claim 14, wherein the said divider is only used on a corn head which has an even number of row dividers.

16. The corn head auger trough crop divider as defined in claim 15, wherein the divider is positioned between a center row divider and a center of the feeder house opening.

17. A crop divider for a corn head having a trough and a transverse auger with flighting, said corn head operationally connected to a harvester by a feeder house, comprising said divider affixed to the trough said divider further comprises a rear divider partially nested within a front divider whereby a flow of grain is directed into the feeder house and whereby the divider does not contact said auger and said divider does not contact said flighting.

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Filed: 04/06/2001	Art Unit: 3671
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2. Petition for Extension of time (1 months)
3. Form 2038
4. Appeal Brief with 3 Appendices.

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